

# Efficacy of pulsed Nd:YAG laser in the treatment of patients with knee osteoarthritis: a randomized controlled trial

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**Abstract** The purpose of this study was to investigate the effects of pulsed Nd:YAG laser plus glucosamine/chondroitin sulfate (GCS) in patients with knee osteoarthritis (KOA) by examining changes in pain and knee function, as well as synovial thickness (ST) and femoral cartilage thickness (FCT). Sixty-seven male patients participated, with a mean (SD) age of 53.85 (4.39) years, weight of 84.01 (4.70) kg, height of 171.51 (3.96) cm, and BMI of 28.56 (1.22). Group 1 was treated with high-intensity laser therapy (HILT), GCS, and exercises (HILT + GCS + EX). Group 2 was treated with GCS plus exercises (GCS + EX), and group 3 received placebo laser plus exercises (PL + EX). The outcomes measured were pain level and functional disability using the visual analog scale (VAS) and Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC), respectively. ST and FCT were measured by ultrasound examination. Statistical analyses were performed to compare differences between baseline and after 6 weeks of treatment and then after 3 months offollow-up. Statistical significance was set at  $p < 0.05$ . VAS and WOMAC were significantly decreased in all groups after 6 weeks, with nonsignificant differences between 6 weeks and 3 months offollow-up. ST was significantly decreased in the HILT + GCS + EX group post-treatment, with nonsignificant decreases in the GCS + EX and PL + EX groups, as well as nonsignificant differences to FCT

in all groups. Overall, pulsed Nd:YAG laser combined with GCS and exercises was more effective than GCS + EX and exercises alone in the treatment of KOA patients.

**Keywords** Knee osteoarthritis · High-intensity laser therapy · Glucosamine/chondroitin Pain · WOMAC

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